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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER
ARMSTRONG, A

ART UNIT	PAPER NUMBER
2741	

DATE MAILED:
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1)☒ Responsive to communication(s) filed on *8/31/99* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

    a)☐ All b)☐ Some * c)☐ None of the CERTIFIED copies of the priority documents have been:

        1.☐ received.

        2.☐ received in Application No. (Series Code / Serial Number) _____ .

        3.☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

14) ☒ Notice of References Cited (PTO-892)

15) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

16) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .

17) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

18) ☐ Notice of Informal Patent Application (PTO-152)

19) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

1.   Claims 1-4, 7-10 and 13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Breese et al. (US Patent No. 5,987,415).

As per claims 1, 7, and 13

"providing a database having statistics including statistics of human associations of voice parameters with emotions" see col. 12, lines 5-21;

"receiving a voice signal" see col. 14, lines 2-33;

"extracting...feature of the voice signal" see col. 14, lines 2-33 and Figure 7;

"comparing the extracted voice feature to the voice parameters in the database" see col. 11, lines 58-67;

"selecting an emotion from the database based on the comparison of the extracted voice feature to the voice parameter" see col. 11, lines 58-67;

"outputting the selected emotion" see col. 11, lines 58-67;

As per claim 2, 8, and 14

"database includes probabilities of particular voice features being associated with

an emotion" see col. 19, lines 14-67 continuing to col. 22, lines 1-67;

As per claim 3, 9, and 15

"…analyzing the probabilities and selecting the most probable emotion based on

the probability" see col. 11, lines 58-67 continuing to col. 14, lines 1-50;

As per claim 4, 10, and 16

"statistics…include self-recognition statistics" see col. 13, lines 19-50.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   Claims 5, 6, 11, 12, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Breese et al. in view of Dellaert et al. ("Recognizing Emotion in Speech").

As per claim 5, 11 and 17

"probabilities of the database include performance confusion statistics" it is noted

that Breese et al. does not teach implementing performance confusion statistics in the database of

the invention. Refer to Dellaert et al. who teach a technique of improving the performance of

statistical pattern classification systems used in classifying utterances according to the emotional

content. Specifically, in section 1, Introduction and Table 1 on page 1970, Dellaert teach using

human evaluators to classify speech utterances generate a human performance confusion matrix

for the purpose of evaluating the performance of the statistical recognition classifier and

identifying system design improvements.

Therefore, to the extent that Breese et al. do not specifically teach a performance

confusion statistic, it would have been obvious to one of ordinary skill at the time of invention to

modify the method of detecting emotions of Breese et al. to incorporate the statistical

information provided by a performance confusion matrix for the purpose of evaluating the

performance of the emotion detector and identifying system design improvements as taught by

Dellaert et al.

As per claim 6, 12, and 18

"plurality of features are extracted including the maximum value of the

fundamental frequency..." it is noted that although Breese et al. teach extraction of speech

features such as pitch, speed and volume, they do not specifically teach maximum, minimum

standard deviation, etc of specific features. Dellaert et al. teach a method of feature extraction

(section 2. Feature Extraction pages 1970-1971) which extracts mean, standard deviation,

minimum, maximum and range of selected speech features. Dellaert et al. teaches that the

implementation of this method of feature extraction in a statistical pattern recognition system for

classifying emotions of utterances yields results that are comparable to human performance.

Therefore, to the extent that Breese et al. do not specifically teach "plurality of features

are extracted including the maximum value of the fundamental frequency...", it would have been

obvious to one of ordinary skill at the time of invention to modify the method of detecting

emotions as taught by Breese et al. to extract the speech feature data as taught by Dellaert et al.

for the purpose of improving the performance of the detection system to yield results

comparable to human evaluators.

Conclusion

3.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Henton (US Patent No. 5,860,064) discloses a statistical database of vocal emotion

parameters for text-to-speech synthesis.

White (US Patent No. 5,734,794) discloses accepting a speech signal, extracting speech

features, determining and extracting emotional cues in the speech, and a database of emotion

parameters.

Black et al. (US Patent No. 5,774,591) discloses a facial statistical expression and gesture

recognition detector.

Yamada et al. teach using a neural network for pattern recognition of emotions.

Slaney et al. teach a system that uses acoustic features to recognize emotions in speech.

The system implements a statistical recognition system and extracts pitch, formant, and energy

statistics.

4.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Angela A. Armstrong whose telephone number is 703-308-6258.

The examiner can normally be reached on Monday-Thursday 6:30-4:00 PM.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David R. Hudspeth can be reached on 703-308-4825. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-308-6306 for regular

communications and 703-308-6296 for After Final communications.

        Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is 703-305-3900.

AAA
March 23, 2000

Richemond Dorvil
Primary Examiner